AMENDMENTS TO THE CLAIMS

1. (Currently Amended) ~~An optical pickup~~ A recording/reproducing apparatus of an information-recording medium comprising:

~~a light source;~~

~~an optical system for condensing a light emitted from said light source;~~

~~a focus controller for controlling said optical system to forma a light spot on an information recording medium;~~

a photo-detecting device for detecting a light beam reflected from the information-recording medium, the photo-detecting device detecting a light amount signal of a region having a large change in a light amount and a light amount signal of a region having a small change in a light amount according to a tilt amount of the information-recording medium;

a processing device for processing signals of the plurality of light beam detected by said photo-detecting device to supply ~~a tracking error signal and a tilt information signal~~ a push-pull value of each region; and

~~a tracking controller for controlling said optical system according to the tracking error signal to make the light spot~~

~~follow an information track formed on the information recording medium; and~~

a tilt controller for compensating ~~the tilt of the information recording medium according to the tilt information signal~~ an influence of a radial shift by using the two push-pull values from the processing device~~;~~ ~~wherein the photo-detecting device is divided into pluralities of regions which are defined by a vertical, horizontal and diagonal lines entering on the central position of the photo-detecting device and wherein the vertical line is parallel to a track of the information medium~~.

2. (Currently Amended) The apparatus of claim 1, wherein the photo-detecting device has eight regions that ~~is~~ are evenly divided in size, and wherein signals detected in said regions are designated by A1, A2, B2, B1, ~~B2,~~ C1, C2, ~~D1~~ D2 and ~~D2~~ D1 starting from seventh octant of the eight regions.

3. (Currently Amended) The apparatus of claim 2, wherein the processing device produces two push-pull signals P1 and P2, where P1=(A1+D1)-(B1+C1) and P2=(A2+D2)-(B2+C2); and outputs ~~the~~a tilt information signal T according to a following equation:

T=P1-k*P2

wherein k is a constant to minimize the influence of a radial shift.

4. (Currently Amended) The apparatus of claim 1, further comprising:

a hologram means installed on an optical path of the light beam reflected from the information-recording medium.

5. (Currently Amended) A tilt detecting method of an information-recording medium comprising the steps of:

detecting a light amount signal of a region having a large change in a light amount and a light amount signal of a region having a small change in a light amount according to a tilt amount of the information-recording medium~~, by means of a photo detecting device~~;

calculating a push-pull value of each region; and

removing an influence of a radial shift by using the two push-pull values~~ and obtaining a tilt information;~~

~~wherein the photo detecting device is divided into pluralities which are defined by a vertical, horizontal and diagonal lines centering on the central position of the photo detecting device and wherein the vertical line is parallel to a track of the information medium~~.

6. (Currently Amended) The method of claim 5, wherein, in the step of detecting a light amount signal, the reflected light reflected from the information-recording medium is divided into regions that are left and right sides of ~~the~~ vertical lines, and a light amount of a region having a large difference in a light amount and a light amount of a region having a small difference in a light amount.

7. (Currently Amended) The method of claim 5, wherein, the step of calculating a push-pull value comprises:

obtaining a difference between the light amount signals that are detected from the left and right sides of ~~the~~ vertical lines having a large change in a light amount, to obtain a first push-pull value; and

obtaining a difference between the light amount signals that are detected from the left and right sides of ~~the~~ vertical lines having a small change in a light amount variation, to obtain a second push-pull value.

8. (Currently Amended) The method of claim 5, <u>further comprising:</u>

<u>obtaining a tilt information,</u>

wherein the step of obtaining the tilt information comprises,

multiplying one of the push-pull values by a constant~~.~~, which minimizes the influence of a radial shift,

subtracting the multiplied push-pull value from the other push-pull value, and

~~determine the constant to minimize the influence of a radial shift; and~~

outputting the tilt information from the subtraction result with substituting determined constant into the subtraction.

9. (Currently Amended) A tilt detecting method of an information-recording medium comprising the steps of:

dividing a light reflected from an information-recording medium to ~~a~~ left and ~~a~~ right regions, dividing the left and the right regions to a region having a large change in a light amount and a region having a small change in a light amount;

obtaining a difference between a sum of the left light amount of the region and the sum of the right light amount of the region having the large change in a light amount, and obtaining a first push-pull value;

obtaining a difference between a sum of the left light amount of the region and the sum of the right light amount of the region

having the small change in a light amount, and obtaining a second push-pull value;

multiplying the second push-pull value by a constant, subtracting the result value from the first push-pull value, and obtaining a push-pull value [[only]] depending on a tilt amount; and

subtracting the push-pull value from a tracking error value and detecting a tilt value~~,~~

~~wherein the photo detecting device is divided into pluralities of regions which are defined by a vertical, horizontal and diagonal lines centering on the central position of the photo detecting device and wherein the vertical line is parallel to a track of the information medium~~.

10. (Original) The method of claim 9, wherein the first push-pull signal is obtained from a difference between a light amount of the region having a relatively large change in a light amount in the upper portion or the lower portion of the left region of the reflected light and a light amount of a region having a relatively large change in a light amount in the upper portion or the lower portion of the right region of the reflected light.

11. (Original) The method of claim 9, wherein the second push-

pull signal is obtained from a difference between a light amount of the region having a relatively small change in a light amount in the upper portion or the lower portion of the left region of the reflected light and a light amount of a region having a relatively small change in a light amount in the upper portion or the lower portion of the right region of the reflected light.

12. (Currently Amended) A tilt detecting method of an information-recording medium comprising the steps of:

detecting pluralities of light signals received by a photo-detecting device arranged in a light receiving path~~:~~, ~~wherein the photo detecting device is divided into eight regions which are defined by a vertical, horizontal and diagonal lines centering on the central position of the photo detecting device and wherein the vertical line is parallel to a track of a information medium; and~~ wherein signals detected in said regions are designated by A1, A2, ~~B1~~B2, ~~B2~~B1, C1, C2, ~~D1~~D2 and ~~D2~~D1 starting from seventh octant of the eight regions;

calculating push-pull signals P1 and P2~~:~~,

wherein P1=(A1+D1)-(B1+C1) and P2=(A2+D2)-(B2+C2); and

outputting a tilt information signal T according to a following equation~~:~~,

T=P1-k*P2

wherein k is a constant to minimize the influence of a radial shift.

13. (Original) The method of claim 12, wherein the constant k is a value that satisfies a condition where no variation in the tilt information signal T is found even when there is an intentional radial shift.

14. (Original) The method of claim 12, further comprising a step of compensating a tilt of the information-recording medium according to the tilt information signal T by substituting the constant k in the equation.